

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application. The changes introduce no new matter and support for such changes is present in the specification, claims, and drawings as originally filed. Any changes made are done without prejudice and are not to be construed as abandonment of any previously claimed subject matter or agreement with any objection or rejection of record.

Listing of Claims:

1. – 18. (Cancelled)

19. (**Currently Amended**) A method of constructing one or more modified lipid ~~bilayer~~ **bilayers**, the method comprising:

- i) providing at least a first primary lipid bilayer;
- ii) providing one or more ~~source~~ **sources** of a UV light[[]];
- iii) providing one or more patterned UV-opaque ~~mask~~ **masks** between the source of UV light and the primary lipid bilayer, which patterned UV mask comprises one or more UV-transparent ~~area~~ **areas** at one or more specific ~~location~~ **locations** in the UV mask;
- iv) creating in the primary lipid bilayer, one or more non-lipid areas beneath the one or more UV transparent areas of the UV-opaque mask, by exposing the primary lipid bilayer to UV light through the one or more patterned UV-opaque ~~mask~~ **masks**, thereby constructing one or more patterned lipid ~~bilayer~~ **bilayers**, which patterned lipid bilayer comprises the one or more non-lipid areas which spatially correspond to the one or more UV-transparent areas in the UV mask[[.]];
- v) providing at least a first secondary lipid bilayer; and,

- vi) contacting the one or more patterned lipid ~~bilayer~~ bilayers with the at least first secondary lipid bilayer, which at least first secondary lipid bilayer localizes within the one or more non-lipid ~~area~~ areas in the patterned lipid bilayer.

20. **(Currently Amended)** The method of claim 19, wherein the ~~at least one~~ UV mask comprises a plurality of UV masks and wherein the at least first secondary lipid bilayer comprises a plurality of secondary lipid bilayers.

21. **(Currently Amended)** The method of claim 20, wherein substantially each member of the plurality of UV masks comprises a different pattern, and wherein substantially each member of the plurality of secondary lipid bilayers comprises a different secondary lipid bilayer; further comprising:

- vii) sequentially repeating steps ii-vi for substantially all members of the plurality of UV masks and for substantially all members of the plurality of secondary lipid bilayers, thereby creating one or more modified primary lipid ~~bilayer~~ bilayers containing a plurality of different secondary lipid bilayers.

22. **(Original)** The method of claim 19 or 21, wherein the first primary lipid bilayer is selected from the group consisting of: a supported lipid bilayer, a tethered lipid bilayer, a polymer-cushioned lipid bilayer, a lipid bilayer comprising proteins in a proteo-lipidic mixture, and a hybrid lipid bilayer comprising an outer lipid layer and an inner self-assembled monolayer.

23. **(Original)** The method of claim 19 or 21, wherein the first primary lipid bilayer comprises a planar lipid bilayer.

24. **(Original)** The method of claim 19 or 21, wherein the first primary lipid bilayer comprises a non-planar lipid bilayer.

25. (Original) The method of claim 24, wherein the non-planar lipid bilayer comprises a spherical lipid bilayer, a cylindrical lipid bilayer, or a selected three-dimensional lipid bilayer.

26. (Original) The method of claim 19 or 21, wherein the first lipid bilayer comprises a bilayer supported on a planar substrate or a bilayer supported on a non-planar substrate.

27. (Original) The method of claim 19 or 21, wherein the first primary lipid bilayer comprises a first lipid layer and at least a second lipid layer.

28. (Original) The method of claim 27, wherein the first layer and the second layer comprise substantially similar lipid profiles, identical lipid profiles, or different lipid profiles.

29. (Original) The method of claim 27, wherein at least one of the first or second layers comprises a synthetic lipid layer.

30. (Cancelled).

31. **(Currently Amended)** The method of claim 19 or 21, wherein the one or more ~~source-sources~~ of UV light ~~comprise~~ ~~comprises~~ a tungsten-halogen lamp, a xenon-arc lamp, a mercury lamp, or an excimer laser.

32. **(Currently Amended)** The method of claim 19 or 21, wherein the one or more ~~source-sources~~ of UV light ~~emit~~ ~~emits~~ UV light of a wavelength from between about 184 nm to about 257 nm.

33. **(Currently amended)** The method of claim 19 or 21, wherein the patterned UV-opaque mask comprises a plurality of UV-transparent ~~area~~ areas.

34. (Original) The method of claim 33, wherein the patterned UV-opaque mask comprises from about 144 to about 2200 UV-transparent areas per square centimeter, from

about 200 to about 1500 UV-transparent areas per square centimeter, or from about 500 to about 1000 UV-transparent areas per square centimeter.

35. **(Currently Amended)** The method of claim 19 or ~~[[20]]~~ 21, wherein the UV-transparent area comprises one or more length or width ~~dimension~~ dimensions of from about 5 millimeters to about 0.1 micrometers or less.

36. **(Currently amended)** The method of claim 35, wherein the one or more length or width ~~dimension~~ dimensions ~~comprise~~ comprises from about 2 millimeters to about 0.5 micrometers or less; from about 1 millimeter to about 1 micrometer ~~micrometers~~ or less; from about 500 micrometers to about 5 micrometers or less; from about 250 micrometers to about 10 micrometers or less; from about 100 micrometers to about 15 micrometers or less; or from about 75 micrometers to about 25 micrometers or less.

37. **(Currently Amended)** The method of claim 19 or ~~[[20]]~~ 21, wherein the at least first secondary lipid bilayer comprises one or more of: a lipid raft, a lipid-coated bead, a liposome, a lipid vesicle, a polymerizable lipid, or a proteo-liposome.

38. **(Currently Amended)** The method of claim 19 or ~~[[20]]~~ 21, wherein the first secondary lipid bilayer and the first primary lipid bilayer comprise substantially similar lipid bilayers, identical lipid bilayers, or different lipid bilayers.

39. **(Original)** The method of claim 38, wherein the at least first secondary lipid bilayer comprises a different lipid profile than the lipid profile of the first primary lipid bilayer, wherein the at least first secondary lipid bilayer comprises a different amount of proteins than the first primary lipid bilayer, wherein the at least first secondary lipid bilayer comprises a different type of proteins than the first primary lipid bilayer, wherein the at least first secondary lipid bilayer comprises a different lipid diffusion coefficient than the first primary lipid bilayer, or wherein the at least first secondary lipid bilayer comprises a different amount of cholesterol than the first primary lipid bilayer.

40. (Original) The method of claim 19 or 21, wherein the one or more non-lipid areas are contiguous non-lipid areas.

41. (Cancelled).

42. (**Currently Amended**) A method of constructing one or more chimeric lipid ~~bilayer~~ bilayers, the method comprising:

- i) providing at least a first lipid bilayer;
- ii) providing one or more ~~source~~ sources of UV light;
- iii) providing one or more patterned UV-opaque ~~mask~~ masks between the source of UV light and the at least first lipid bilayer, which patterned UV mask comprises one or more UV-transparent ~~area~~ areas at one or more specific ~~location~~ locations in the UV mask;
- iv) creating in the primary lipid bilayer, one or more non-lipid areas beneath the one or more UV transparent areas of the UV-opaque mask, by exposing the primary lipid bilayer to UV light through the one or more patterned UV-opaque ~~mask~~ masks, thereby constructing one or more patterned lipid ~~bilayer~~ bilayers, which patterned lipid bilayer comprises the one or more non-lipid areas which spatially correspond to the one or more UV-transparent areas in the UV mask~~[[.]]~~;
- v) providing at least a first secondary material; and,
- vi) contacting the one or more patterned lipid ~~bilayer~~ bilayers with the at least first secondary material, which at least first secondary material localizes within the one or more non-lipid ~~area~~ areas in the patterned lipid bilayer.

43. **(Currently Amended)** The method of claim 42, wherein the ~~at least one~~ UV mask comprises a plurality of UV masks and wherein the at least first secondary material comprises a plurality of secondary materials.

44. **(Currently Amended)** The method of claim 43, wherein substantially each member of the plurality of UV masks comprises a different pattern, and wherein substantially each member of the plurality of secondary materials comprises a different secondary material; further comprising:

- vii) sequentially repeating steps ii-vi for substantially all members of the plurality of UV masks and for substantially all members of the plurality of secondary materials, thereby creating one or more chimeric lipid ~~bilayer~~ **bilayers** containing a plurality of different secondary materials.

45. **(Original)** The method of claim 42 or 44, wherein the first primary lipid bilayer is selected from the group consisting of: a supported lipid bilayer, a tethered lipid bilayer, a polymer-cushioned lipid bilayer, a lipid bilayer comprising proteins in a proteo-lipidic mixture, and a hybrid lipid bilayer comprising an outer lipid layer and an inner self-assembled monolayer.

46. **(Original)** The method of claim 42 or 44, wherein the first primary lipid bilayer comprises a planar lipid bilayer.

47. **(Original)** The method of claim 42 or 44, wherein the first primary lipid bilayer comprises a non-planar lipid bilayer.

48. **(Original)** The method of claim 47, wherein the non-planar lipid bilayer comprises a spherical lipid bilayer, a cylindrical lipid bilayer, or a selected three-dimensional lipid bilayer.

49. (Original) The method of claim 42 or 44, wherein the first lipid bilayer comprises a bilayer supported on a planar substrate or a bilayer supported on a non-planar substrate.

50. (Original) The method of claim 42 or 44, wherein the first primary lipid bilayer comprises a first lipid layer and at least a second lipid layer.

51. (Original) The method of claim 50, wherein the first layer and the second layer comprise substantially similar lipid profiles, identical lipid profiles, or different lipid profiles.

52. (Original) The method of claim 50, wherein at least one of the first layer or the second layer comprises a synthetic lipid layer.

53. (Cancelled).

54. (**Currently Amended**) The method of claim 42 or 44, wherein the one or more ~~source~~ sources of UV light comprise ~~comprises~~ a tungsten-halogen lamp, a xenon-arc lamp, a mercury lamp, or an excimer laser.

55. (**Currently amended**) The method of claim 42 or 44, wherein the one or more ~~source~~ sources of UV light emit ~~emits~~ UV light of a wavelength from between about 184 nm to about 257 nm.

56. (Original) The method of claim 42 or 44, wherein the patterned UV-opaque mask comprises a plurality of UV-transparent areas.

57. (Original) The method of claim 56, wherein the patterned UV-opaque mask comprises from about 144 to about 2200 UV-transparent areas per square centimeter, from about 200 to about 1500 UV-transparent areas per square centimeter, or from about 500 to about 1000 UV-transparent areas per square centimeter.

58. (Currently Amended) The method of claim 42 or 44, wherein the UV-transparent area comprises one or more length or width ~~dimension~~dimensions of from about 5 millimeters to about 0.1 micrometers or less.

59. (Currently Amended) The method of claim 58, wherein the one or more length or width ~~dimension~~dimensions ~~comprises~~ comprise from about 2 millimeters to about 0.5 micrometers or less; from about 1 millimeter to about 1 micrometer ~~micrometers~~ or less; from about 500 micrometers to about 5 micrometers or less; from about 250 micrometers to about 10 micrometers or less; from about 100 micrometers to about 15 micrometers or less; or from about 75 micrometers to about 25 micrometers or less.

60. (Original) The method of claim 42 or 44, wherein the one or more non-lipid areas are contiguous non-lipid areas.

61. (Original) The method of claim 42 or 44, wherein the secondary material comprises one or more of: a cell, a protein, a glass bead, a latex bead, a bilayer coated bead, a membrane compatible amphiphilic polymer, a nanocrystal, a colloid, a quantum-dot material, a metal, a metal bead, or a polymerizable precursor molecule.

62. (Original) The method of claim 42 or 44, wherein the secondary material undergoes a spatially confined chemical reaction.

63. (Original) The method of claim 62, wherein the reaction comprises one or more of an electrochemical metal reduction, a polymerization, a protein-ligand reaction, or a cell-capture.

64. – 140. (Cancelled).